

REMARKS

In the Final Office Action, the Examiner rejected claims 1, 5, 8-10, and 23 under 35 USC § 103(a) as being unpatentable over Mellitz in view of Kerschner, et al. Mellitz describes a method for determining a characteristic impedance of a transmission line. This prior art is the only cited publication that discusses high frequency measurement of PWB traces. However, the method describes a manual or hand held process for measurement. It does not disclose the apparatus or system for performing the test other than a single probe comprising a SMA PC mount connector having a 1.3 mm square center pin with three of the four surrounding 1 mm square ground pins cut off to yield a convenient 2-prong probe for accurate measurements. See col. 3, lines 11-15. In addition, the disclosure states: "as shown in FIG. 7, the setup for the measurements steps involves the insertion of probe 14 into signal launch 30 that is connected to the line under test 18". This method of measurement of a characteristic impedance could be used, along with other well known methods, on the present robotic apparatus or system. The present invention is not claiming an algorithm or method of measurement of characteristic impedance, but a robotic system for accurately placing and retracting a high frequency probe with a fixed pitch on test point on a PWB. The Mellitz system does not teach the aforementioned system nor does it disclose or imply any robotic system or positioning the probe in an X, Y or Z axis as presently claimed in the patent application. Further, the present claims require that the probe be configured to have a controlled impedance. See page 8, line 17. The probe of Mellitz fails to teach or imply this important feature.

The Kerschner, et al., device is for determining whether semiconductors are properly soldered. See abstract, col. 1, lines 15-16 and col. 2, lines 48-51. This device uses a capacitive test probe, which is placed on top of a mounted component (a loaded PWB) and connected to a capacitance measurement device. See abstract and col. 2, lines 52-54. The system is a “bed of nails” system and not a probe with a single signal probe and ground probe. The present invention does not measure or use a capacitive test probe for measuring capacitance, but claims an impedance controlled probe for measuring impedance. Time domain reflectometry is an entirely different field of electrical engineering from capacitive measuring. Engineers who focus on reflectometry would not consider the field of capacitive measurement for designing domain reflectometry systems.

In order to further show the unique features of the present invention, claims 1, 5, and 23 have been amended to include the feature of the robotic arm being movable in an X, Y, and Z axis for placement of the probe, the probe is a controlled impedance probe, the system is for measuring traces or test points on an unloaded PWB (not for component testing) and that the system is specifically for measuring impedance of the traces. Neither Mellitz nor Kerschner, individually or in combination disclose or imply the features in the present claims.

Claim 4 was rejected under 35 USC §103(a) as being unpatentable over Mellitz in view of Kerschner as applied to claim 1 and further in view of Sinsheimer. Sinsheimer was cited for a probe assembly changing station. Sinsheimer discloses a test probe device that must be specially built for each different application while the present invention is for virtually all PWBs. This patent is similar to Kerschner, in that it is for testing solder joints of components mounted on

a circuit board. Further, due to the allowability of independent claim 1, dependent claim 4 is also allowable. Apparently, claim 5 was rejected under this same paragraph of the office action. Claim 5 is also a dependent claim, and therefore allowable. Note that claim 5 has been amended to be consistent with claim 1.

Having responded to each and every objection and rejection raised by the Examiner, it is believed that the patent application is now in condition for allowance, and such allowance is respectfully requested. If the Examiner has any questions or suggestions for expediting an allowance in this matter, the Examiner is invited to call the undersigned collect.


This Response to Office Action is submitted in response to the office action dated May 7, 2003, making this response due August 7, 2003. Filed concurrently herewith is a Request for a Three-Month Extension of Time, making this Response due by November 7, 2003. It is respectfully requested that, if necessary to effect a timely response in application Serial No. 09/738,044, this paper be considered as a Petition for an Extension of Time, sufficient to effect a timely response at any time during prosecution. The three month extension fee of \$465.00 is enclosed herewith.

The Commissioner is authorized to charge any fees or credit any overpayment under 37 CFR §§ 1.16 and 1.17 which may be required during the entire pendency of the application to Deposit Account No. 01-2335.

Respectfully submitted,

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